



Evaluating MMOG Technology for System Development

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**Rockwell
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Development Scale and Scope Problems

- Scale: large systems are developed by complex organizations: dozens of suppliers, several tiers & locations
- Scope: small scale hardware enables integration of diverse capability; requires diverse & distributed expertise
- Common media are inadequate for developing familiarity & trust, clarifying information, coordinating supplier activities
 - Misinterpretation of requirements, designs, interfaces, tests, plans: T&E becomes an iterative discovery, not a confirmation
- Collocation optimizes development but is unlikely; medium that simulates collocation could mitigate problems
- Evaluation focused on integrating 25 regional facilities

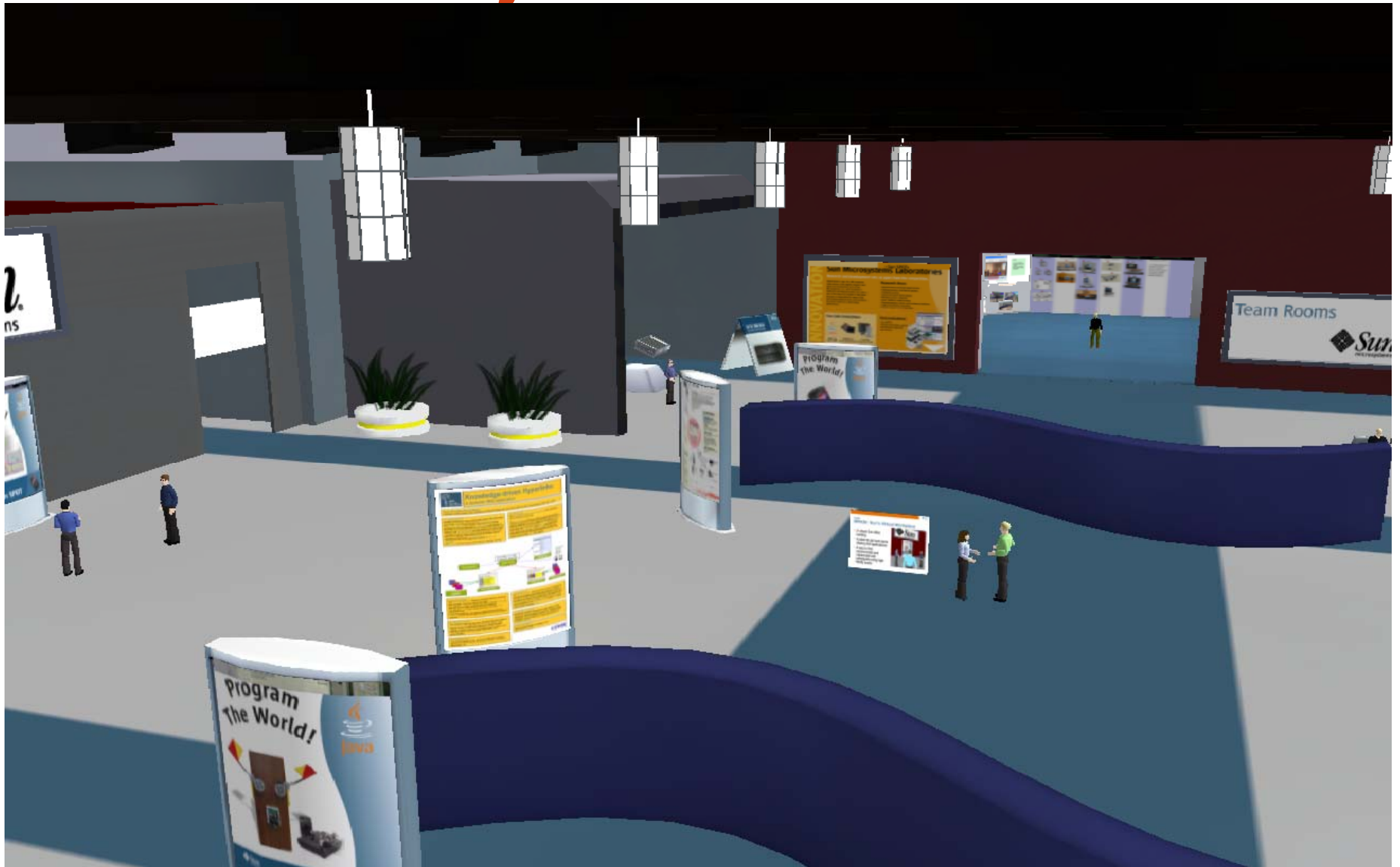
Massively Multiplayer Online Game Features

- Participants view 3-dimensional world on PC monitor
- Standard keyboard or game pad steers developer representation (avatar) through virtual offices, labs, etc.
 - Includes persistent identity, integrated audio/video, data & object persistence, common view, integrated development tools
- Strangers meet, form teams, strategize, execute plans, coordinate actions – e.g., World of Warcraft, Second Life
- Could be close enough to collocation to significantly improve distributed collaboration
 - Clarify requirements, design, code, test, planning

Sun Microsystems MPK20

- Includes prefabricated concourse, conference room, offices, lab, all of which can be modified & expanded
- Users logged onto same server see, hear each other (audio via VOIP using PC microphone/headset)
- Collaborative development is via standard desktop applications launched in 2-D in-world windows
 - Participants jointly develop artifacts via application sharing
 - 3-D objects can be assembled and animated
- Operation can be confined within firewall to resolve third party storage, data/access control, identity masking, etc.

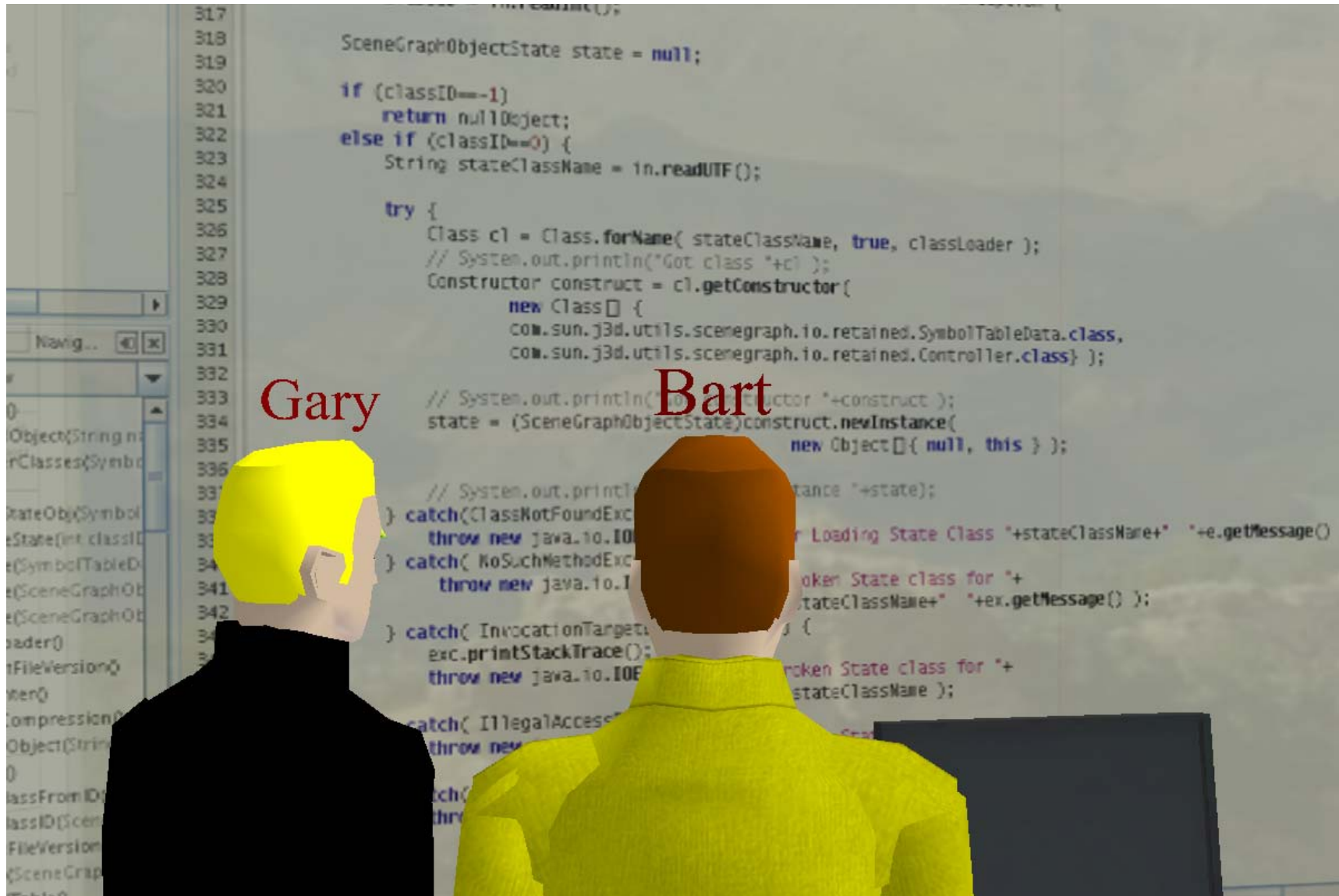
MPK20 – Project Wonderland



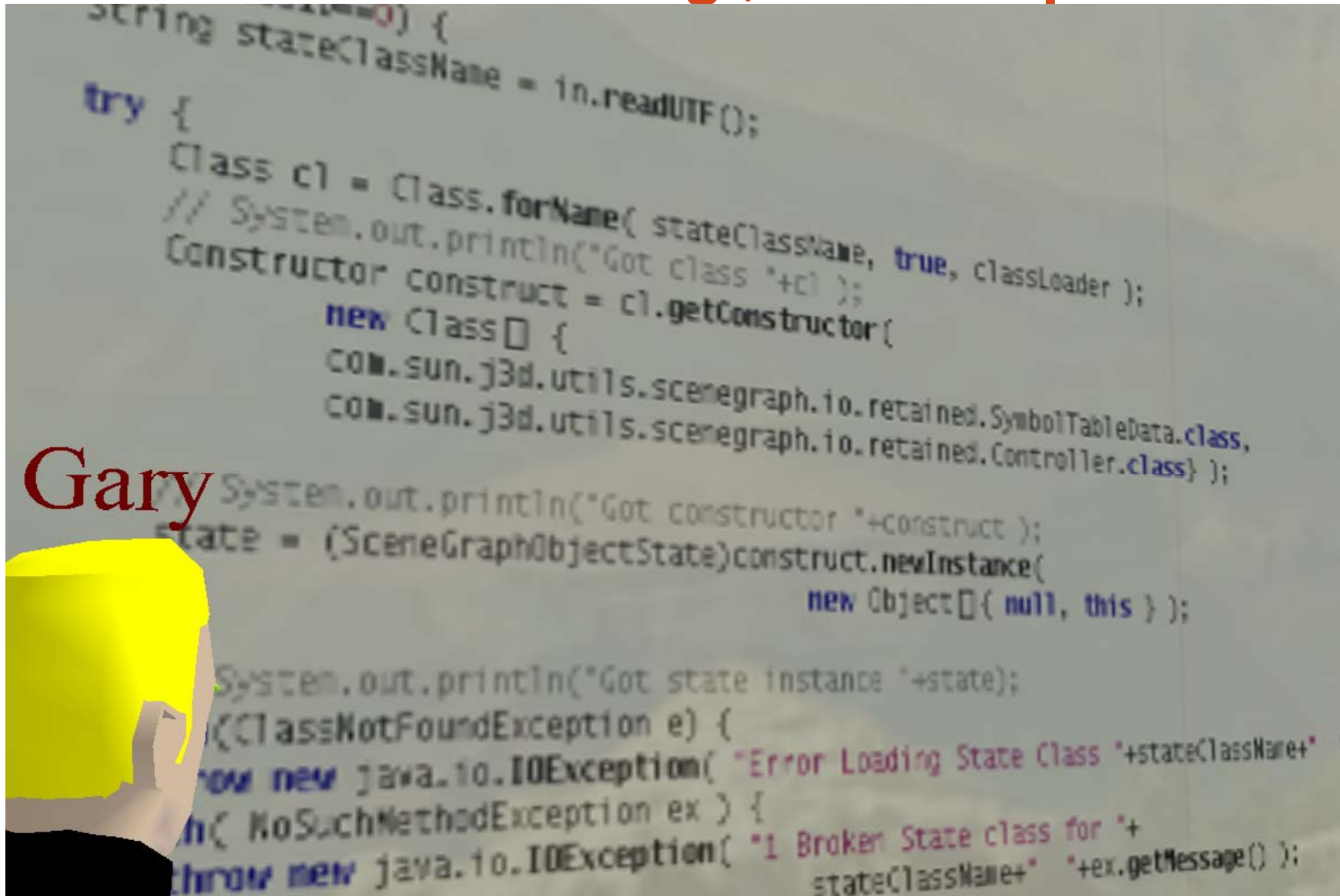
Office with Open Code Window



3rd Person View

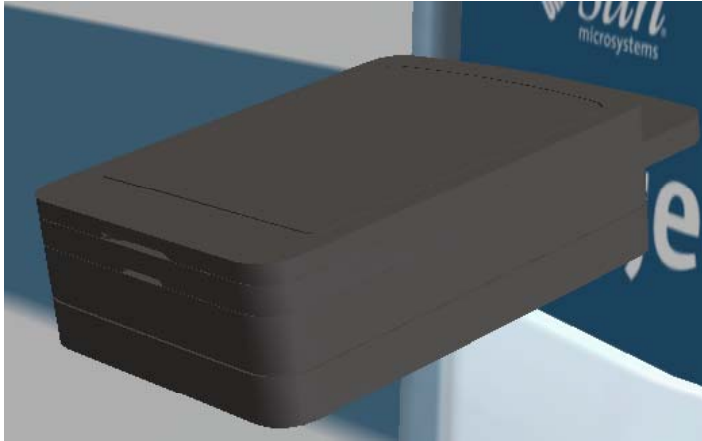


First Person View – e.g., code inspection

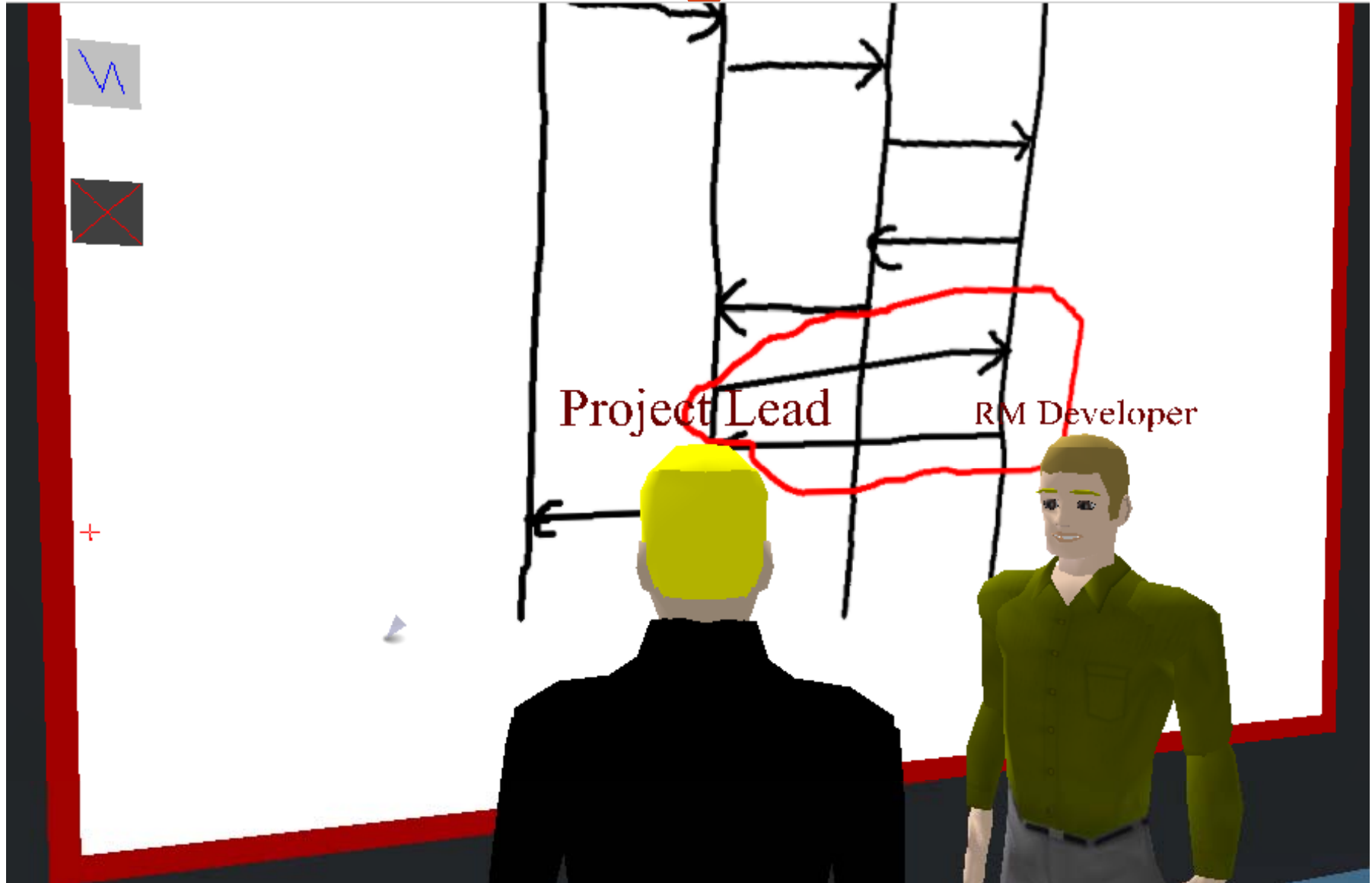


Gary

Object Animation



Collaborative Design



Subjective Assessment

- Promotes familiarity & trust, informal communication, developer coordination better than conventional media
- Integrated tools improve common understanding, increase accuracy of understanding
 - Requirements, designs, interfaces, development status
 - Analysis of integration & T&E results, determination of responsibility
- Some issues: application sharing for Wintel platforms, limited avatar gestures, unclear scalability
- Results justify pilot project – distributed training

Emerging Concept

- Central area for system assembly & test
- Contractor/subcontractor-specific, end-user, acquisition teams populate hallways radiating from assembly area
 - Contain access controlled offices & labs
- Developers analyze, design, code, test in windows visible to all authorized participants
- Library contains released artifacts accessed via integrated tools – e.g., modeling, requirements management
 - Artifact reviews held in virtual library, program reviews held in virtual auditorium

Acronyms

- 2-D – 2 Dimensional
- 3-D – 3 Dimensional
- MMOG – Massively Multiplayer Online Game
- T&E – Test & Evaluation
- VOIP - Voice Over Internet Protocol